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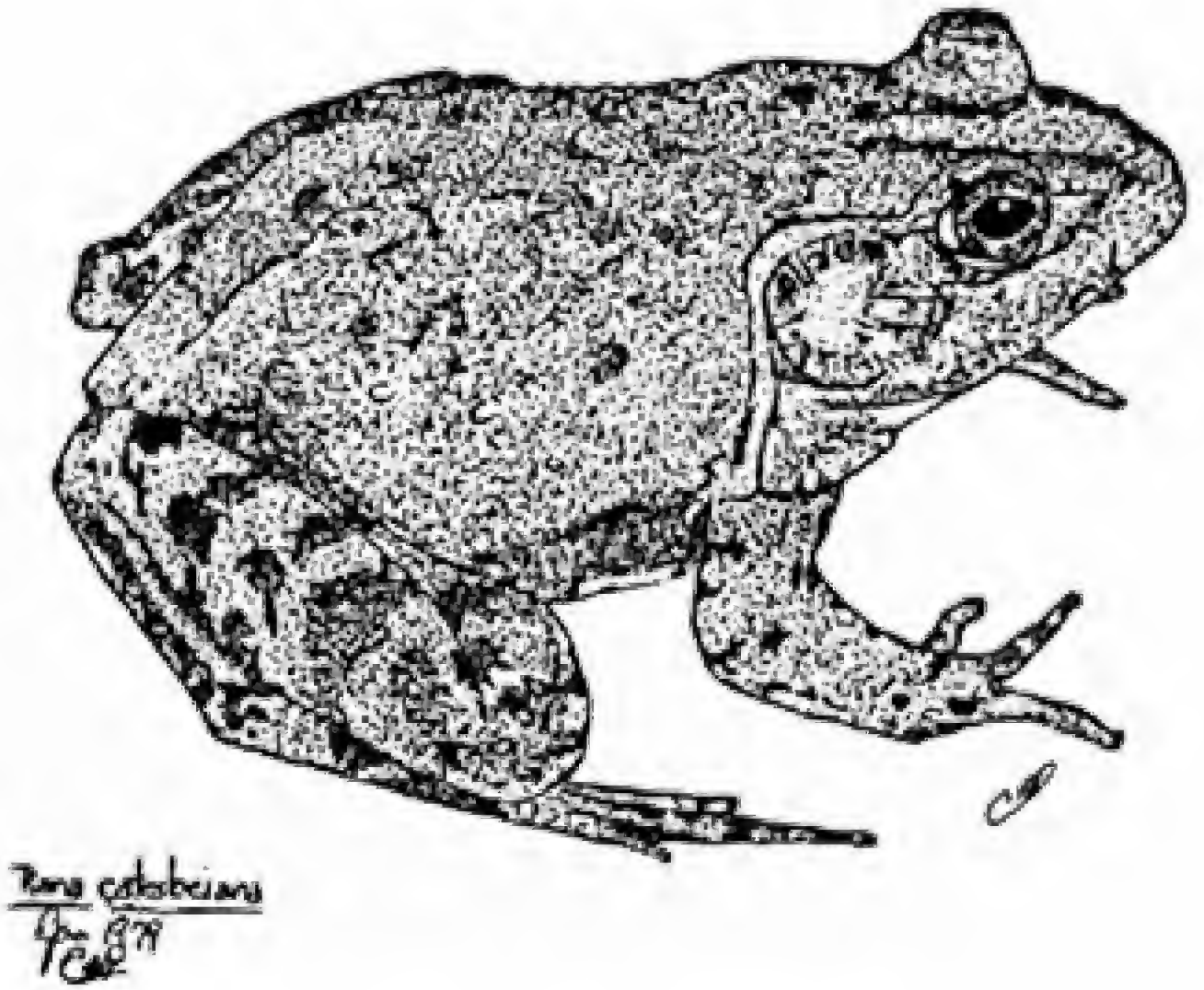

BULLETIN OF THE VIRGINIA HERPETOLOGICAL SOCIETY

ISSN 0892-0761

Volume 21 2001 Number 2

BULLETIN INFORMATION

Catesbeiana is published twice a year by the Virginia Herpetological Society. Membership is open to all individuals interested in the study of amphibians and reptiles and includes a subscription to *Catesbeiana*, two newsletters, and admission to all meetings. Annual dues for regular membership are $15.00 (see application form on last page for other membership categories). Payments received after September 1 of any given year will apply to membership for the following calendar year. Dues are payable to: Dr. Paul Sattler, VHS Secretary/Treasurer, Department of Biology, Liberty University, 1971 University Blvd., Lynchburg, VA 24502.

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EDITORIAL POLICY

The principal function of *Catesbeiana* is to publish observations and original research about Virginia herpetology. Rarely will articles be reprinted in *Catesbeiana* after they have been published elsewhere. All correspondence relative to the suitability of manuscripts or other editorial considerations should be directed to Dr. Steven M. Roble, Editor, *Catesbeiana,* Virginia Department of Conservation and Recreation, Division of Natural Heritage, 217 Governor Street, Richmond, VA 23219.

Major Papers

Manuscripts being submitted for publication should be typewritten (double spaced) on good quality 8½ by 11 inch paper, with adequate margins. Consult the style of articles in this issue for additional information, including the appropriate format for literature citations. The metric system should be used for reporting all types of measurement data. Computer diskettes (Word or WordPerfect format) are desired for longer papers. Submissions concerning the herpetofauna of selected areas, such as a state park or county, should be prepared in article rather than field note format. Articles will be refereed by the editor and at least one other qualified reviewer. All changes must be approved by the author before publication; therefore, manuscripts must be received by the editor before the first of March and September to be considered for publication in the spring or fall issue, respectively, of *Catesbeiana*. Reprints of articles are not available to authors; however, authors may reprint articles themselves to meet professional needs.

(Editorial policy continued on inside back cover)

CATESBEIANA

Bulletin of the Virginia Herpetological Society

Volume 21 Fall 2001 No. 2

Contents

Reptile and Amphibian Survey of Selected Tracts on the Northern Neck and Middle Peninsula of Virginia
Robert S. Greenlee 51

Turtle Mortality in Powhatan County, Virginia
Jason D. Gibson 65

Sensitivity of Spotted Salamander (*Ambystoma maculatum*) Embryos to UV-B Radiation in Central Virginia
Jeffrey Howard and Norman Reichenbach 69

VHS Field-Study Grants 74

Field Notes 75

President's Corner 80

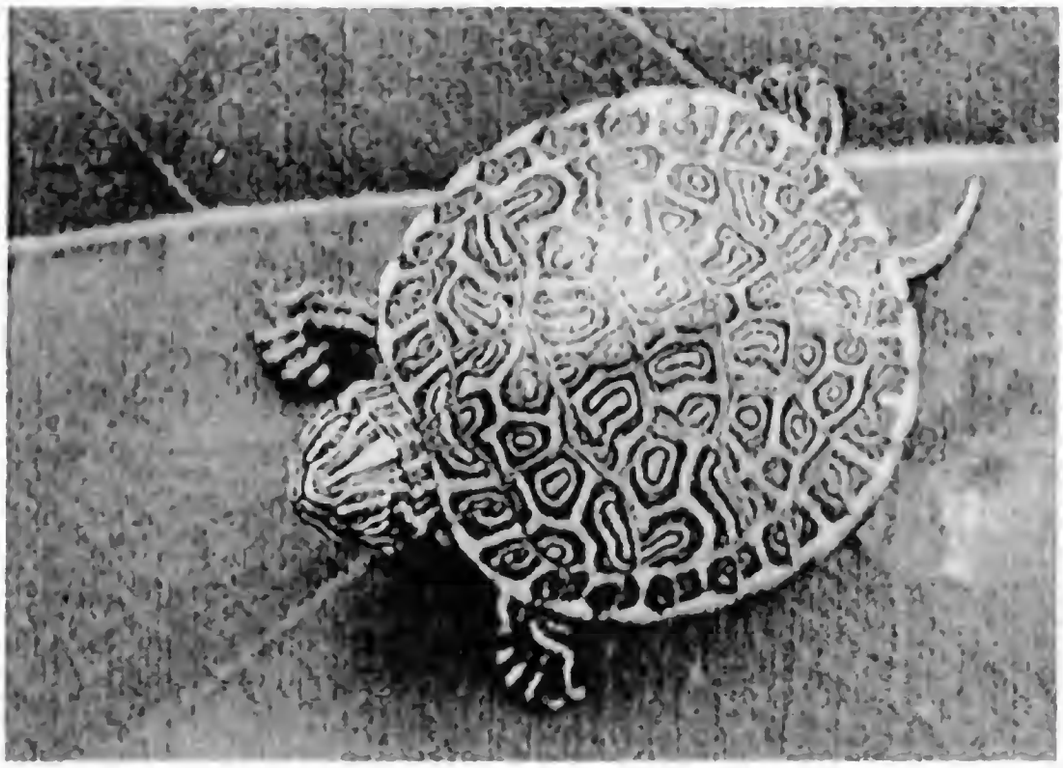
Minutes of the Spring 2001 VHS Meeting 81

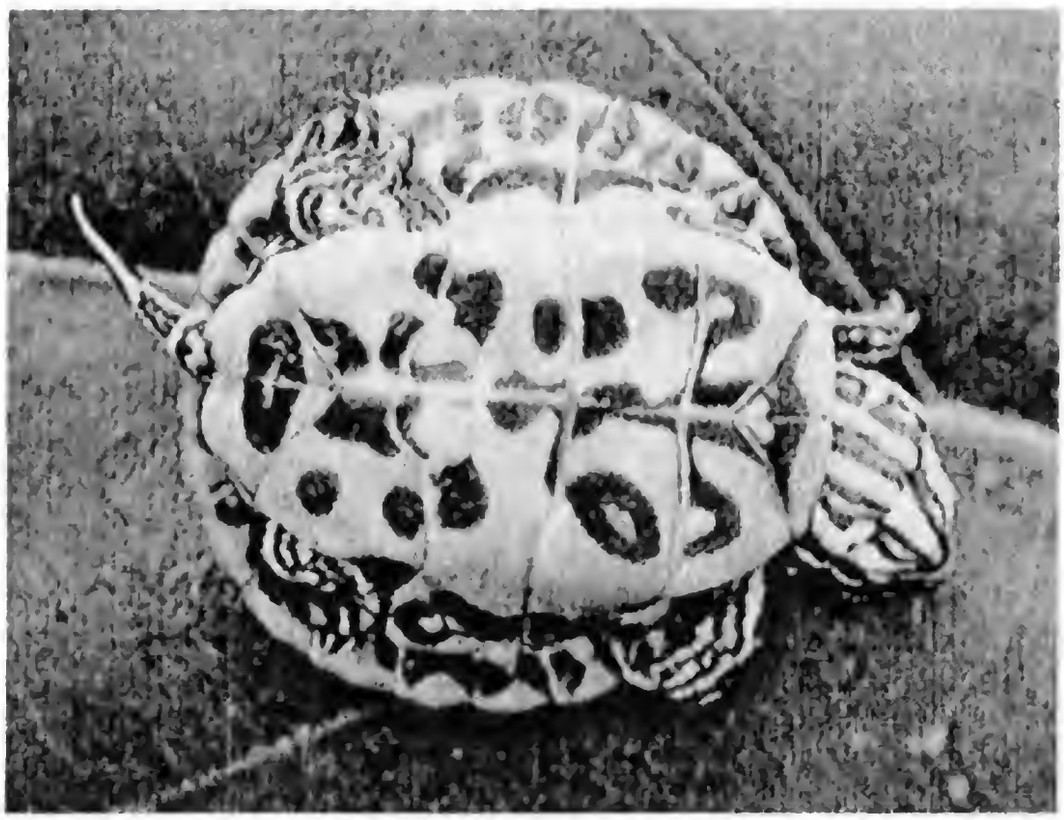
Treasurer's Report 82

Fall 2001 Meeting Notice 83

2001 Membership List 87

Next Meeting
October 27, 2001
Northern Virginia Community College
Annandale, Virginia
See page 83 for details





Juvenile Northern Red-bellied Cooter (*Pseudemys rubriventris*)
Shenandoah River, Warren County, Virginia
Photos by John White

Reptile and Amphibian Survey of Selected Tracts on the Northern Neck and Middle Peninsula of Virginia

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Comprehensive herpetofaunal surveys are generally lacking on the Northern Neck and Middle Peninsula of Virginia, with the distribution of a number of reptile and amphibian species being undetermined in this region of the Commonwealth (Mitchell and Reay, 1999). The region is a patchwork of unique habitat types including salt marsh, bayside dune complexes, lowland loblolly pine stands, mixed hardwood-pine forests, wooded ravines, cypress-hardwood swamps, and emergent freshwater marshes. There are a number of unique resource areas occurring in this region, which are managed by non-profit groups, local and county governments, and state agencies. Surveys for reptiles and amphibians on these resource areas are needed to further document faunal richness and provide the information required for inclusion of these faunal groups in future management plans.

The Virginia Herpetological Society (VHS) annually selects, and conducts surveys for reptiles and amphibians on sites within the Commonwealth. These surveys focus on areas in need of additional sampling effort, and generally require the area be available for future sampling. VHS survey sites are distributed throughout Virginia.

Study Sites

In 2000, VHS focused spring survey efforts on specific publicly- and privately-owned management areas in Lancaster, Middlesex, and Northumberland counties.

Lancaster County

Belle Isle State Park

Located along the north shore of the tidal Rappahannock River south of Somers, this 223 ha (733 ac) management area is a mixture of salt marsh,

mixed pine-hardwood swamp forests, and converted agricultural fields. Belle Isle State Park is managed by the Virginia Department of Conservation and Recreation (DCR) for activities typical of state parks throughout the Commonwealth. VHS survey efforts focused on fields in the vicinity of the park office, wooded swamps adjacent to the entrance road, and areas adjacent to Mud Creek, Neck Field and Watch House Trails.

Chilton-Dilliston Tract

This privately-held tract of 243 ha (601 ac) was being considered for acquisition by the Virginia Department of Forestry at the time of the survey. The tract includes upland forest, ponds with associated emergent wetlands, agricultural fields, wooded swamps, and perennial streams with associated wooded flood plans. Access to the tract is off County Route 600, approximately 0.6 km NW of Alfonso. A small perennial stream and surrounding wooded riparian zone, reached via the access road was one of two sites surveyed within this tract. The second site included a shallow pond (ca. 2 ha), associated emergent wetlands, extensive surrounding upland forests, and a power line cutover.

Hickory Hollow Natural Area Preserve

Access to this 77 ha (254 ac) preserve is approximately 0.5 km north of Milestone on County Route 604. Habitats within Hickory Hollow include mixed upland forests, ravines, perennial and seasonal streams, emergent wetlands, wooded swamps, and wooded riparian floodplains. This unique habitat complex supports several mountain disjunct plant species and one rare plant species. The Northern Neck Audubon Society purchased this resource area from Lancaster County in 1999. The preserve is now managed by the Virginia Department of Conservation and Recreation (DCR) Division of Natural Heritage (DNH) to "protect natural resources, and to provide public access for education, nature study, and passive recreation."

Lively YMCA Property

This privately-held tract is located approximately 2 km south of Lively off Route 201, and includes habitats as varied as upland forests, recreational fields, and swimming pool filters.

Middlesex County

Big Island Property:
Friends of Dragon Run manage this unique 82 ha (203 ac) tract of mixed cypress-hardwood swamp, floodplain forest, and an adjacent section of Dragon Run Swamp with its extensive emergent freshwater marshes. Dragon Run Swamp, which forms the headwaters of the Piankatank River, has a relatively intact watershed with extensive complexes of cypress-hardwood swamp, scrub-shrub wetland, and emergent freshwater marsh. While access to the Big Island property is limited, there is an interpretive trail on the Island which begins at a point just downstream of the "Friends of" access site - off County Route 610 in King and Queen County. VHS survey efforts focused on the southeastern 1/3 of the Island as well as 3 baited hoop nets set approximately 500 m downstream of the Island.

Northumberland County

Bush Mill Stream Natural Area Preserve
This 42 ha (105 ac) tract consists of mixed upland forest, and emergent wetland and wooded swamp along Bush Mill Stream. Bush Mill Stream is a headwater tributary of the Great Wicomico River. The Preserve is managed by the Virginia Department of Conservation and Recreation Division of Natural Heritage (DNH) to "protect natural resources, and to provide public access for education, nature study, and passive recreation."

Hughlett Point Natural Area Preserve
An 83 ha (204 ac) area dominated by lowland loblolly and mixed pine-hardwood forest (max. elevation < 3 m), and frequently inundated salt marshes associated with the Chesapeake Bay. Managed by DNH, Hughlett Point supports a population of the federally threatened *Cicindela dorsalis dorsalis* (northeastern beach tiger beetle). VHS survey sampling efforts focused on flooded ditches and swale pools, and downed logs.

Materials and Methods

Sampling by the VHS was done on 20 May 2000. Six teams ranging up to 8 individuals sampled pre-selected sites within the management areas described above. Site selection was designed to obtain sampling coverage

of all available habitat types, aquatic and terrestrial. Survey sites were geo-referenced, with reference coordinates listed in Table 1.

Table 1. List of resource areas and sites surveyed on 20 May 2000 during the VHS spring survey.

County	Resource Area	Site Code	Reference Coordinates
Lancaster	Belle Isle State Park	A	37,46,46 N / 76,35,34 W
	Chilton-Dilliston	B	37,48,51 N / 76,31,52 W
	Hickory Hollow	C	37,46,18 N / 76,26,53 W
	YMCA	D	37,45,51 N / 76,31,27 W
Middlesex	Big Island	E	37,39,45 N / 76,43,09 W
Northumberland	Bush Mill	F	37,52,27 N / 76,26,55 W
	Hughlett Point	G	37,44,19 N / 76,18,46 W

Male vocalizations and visual observations were used to document frogs. Terrestrial salamanders were found by overturning rocks and logs in open and forested areas, and by breaking up decaying woody debris and logs. Aquatic salamanders were sampled by examining aquatic vegetation along margins, and by overturning woody debris and other substrate. Survey techniques for turtles included baited hoop nets. Snakes were sampled by overturning available cover and by incidental visual observation.

Results

Heavy precipitation occurred across the survey area in the 24 hours prior to 20 May 2000. During the survey, there was complete cloud cover, with periods of light rain and drizzle. Air temperature ranged between 14 and 18 °C.

In the course of the survey, 15 amphibian and 14 reptile species were observed as discussed below. Note that sites for species observations are listed in brackets and site codes refer to Table 1.

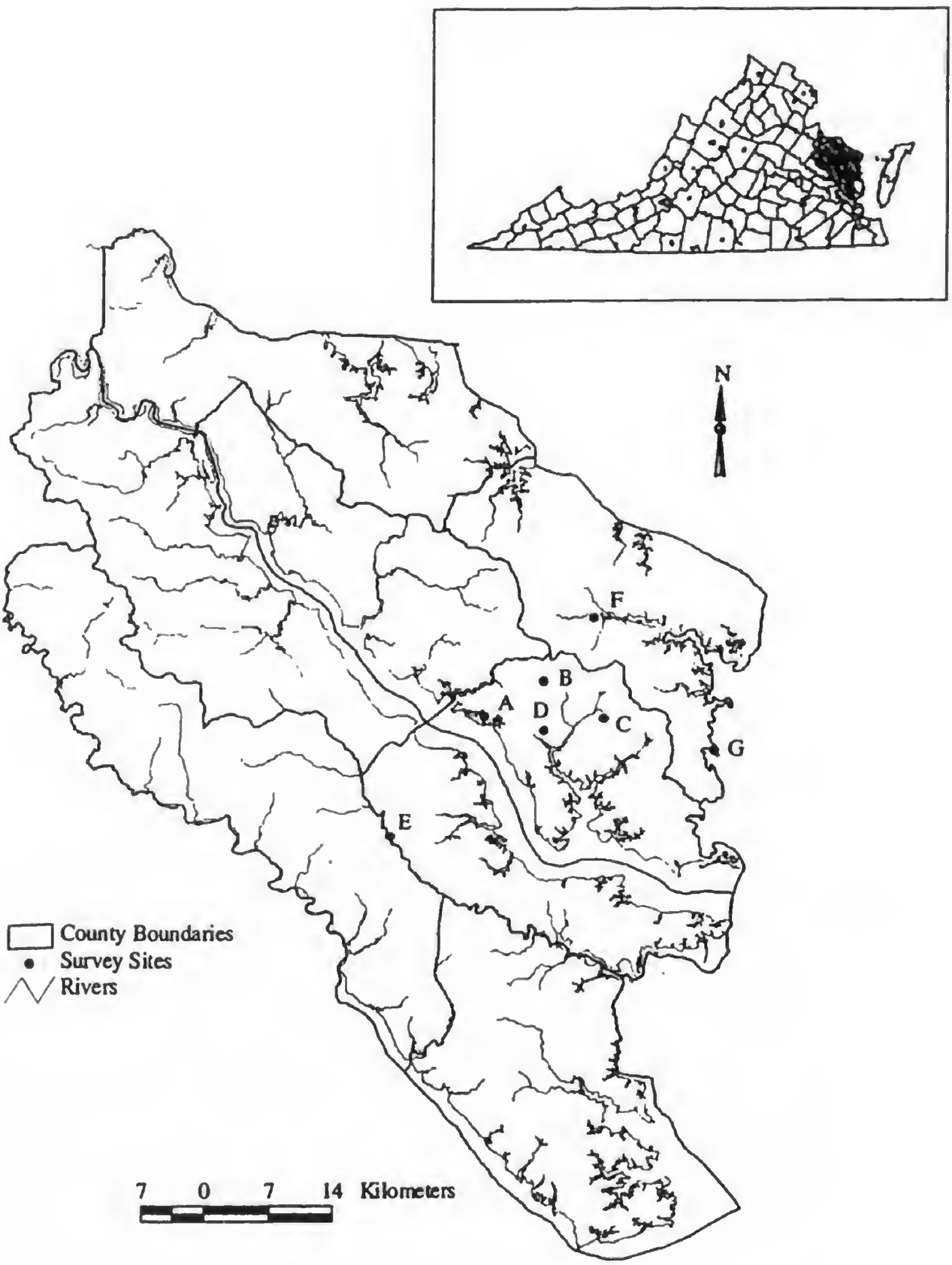


Figure 1. Map of the Northern Neck and Middle Peninsula showing sites surveyed by VHS on 20 May 2000. Sites (A - G) are identified in Table 1.

Amphibians

1. *Ambystoma maculatum* (Spotted salamander) – [A]

Tadpoles were observed in a wooded swamp, and metamorphs were observed under decaying logs.

2. *Ambystoma opacum* (Marbled salamander) – [A, B, E]

Adults were observed under decaying logs. One adult measured 52 mm SVL.

3. *Eurycea cirrigera* (Southern two-lined salamander) – [A, C, E]

Ten adults were observed. Of these, seven were females found in association with egg clusters located under decaying logs. Numerous larvae were observed.

4. *Plethodon cinereus* (Red-backed salamander) – [G]

Two adults, both lead phase, were observed in and under decaying logs.

5. *Plethodon cylindraceus* (White-spotted slimy salamander) – [E]

Four adults were observed in and under decaying logs. Of these, two were females curled around egg clusters. Several additional egg clusters were observed.

6. *Acris crepitans crepitans* (Eastern cricket frog) – [B, E]

Calling adult males were heard streamside, in a wooded swamp, as well as in an emergent wetland associated with a pond.

7. *Bufo americanus americanus* (Eastern American toad) – [B, C, F]

Four adults were observed. Two of these were identified as males, one of which measured 55 mm SVL and weighed 12.5 g; the other measured 60

mm SVL and weighed 14.5 g. Several tadpoles were observed in a pond.

8. *Bufo fowleri* (Fowler's toad) – [B, E, F]

Three adults were observed, including one male that measured 61 mm SVL and weighed 14 g.

9. *Gastrophryne carolinensis* (Eastern narrow-mouthed toad) – [A, D]

One adult was found in a swimming pool filter, and another was observed under a log in a temporarily flooded freshwater trough.

10. *Hyla chrysoscelis* (Cope's gray treefrog) – [A, D, E]

Adult males were heard calling in wooded swamps. One individual, measuring 40 mm SVL and weighing 7.5 g, was observed in a swimming pool filter.

11. *Hyla cinerea* (Green treefrog) – [A]

Adult males were heard vocalizing at this site.

12. *Rana catesbeiana* (American bullfrog) – [A, B, D, E]

Several adult males were heard calling in wooded swamps and temporarily flooded pools. One individual (83 mm SVL, 70 g) was collected from a swimming pool filter. Another (123 mm SVL, 194 g) was collected from a pond. Numerous tadpoles were observed.

13. *Rana clamitans* (Northern green frog) – [A, B, C]

Males were heard vocalizing in wooded swamps, and streamside. Tadpoles were observed at site C.

14. *Rana palustris* (Pickerel frog) – [C, E]

Two adults were observed in wooded floodplains.

15. *Scaphiopus holbrookii* (Eastern spadefoot) – [A, D]

Numerous juveniles (n = 28) were observed under debris piles and one adult was observed adjacent to a temporarily flooded area of a field. Another adult (50 mm SVL, 22.5 g) was collected from a swimming pool filter.

Reptiles

16. *Chelydra serpentina serpentina* (Eastern snapping turtle) – [A, B]

One juvenile was observed in a field, one adult female (254 mm CL) was observed digging a nest trailside, and one adult was observed in a pond.

17. *Chrysemys picta picta* (Eastern painted turtle) – [A, B, E]

Three adults were collected via hoop nets, measured (Table 2), and released. One mower fatality was noted.

Table 2. Size and sex of eastern painted turtles observed during the survey.

CL (mm)	PL (mm)	Weight (g)	Sex
100	97	159	Male
137	126	310	Male
145	136	460	Female

18. *Kinosternon subrubrum subrubrum* (Eastern mud turtle) – [A]

Two adult males measuring 83 mm CL and 92 mm CL, respectively, were observed in salt marsh habitat on the edge of lowland pine habitat.

19. *Pseudemys rubriventris* (Northern red-bellied cooter) – [E]

One adult male was captured in a baited hoop net. This individual measured 267 mm CL and 239 mm PL, and weighed 260 g.

20. *Sternotherus odoratus* (Common musk turtle) – [E]

Four adults were collected in baited hoop nets, and one individual was observed in a decaying log. All were weighed and measured (Table 3).

Table 3. Size and sex of common musk turtles observed during the survey.

CL (mm)	PL (mm)	Weight (g)	Sex
91	72	139	Female
62	45	41	Male
77	63	93	Male
87	60	101	Male

21. *Terrapene carolina carolina* (Eastern box turtle) – [C, E, F]

Three adult males and one adult female were observed. One male measured 130 mm CL and 120 mm PL, and weighed 365 g. The female measured 127 mm CL and weighed 400 g.

22. *Eumeces fasciatus* (Five-lined skink) – [C, D, E]

Seven adults were observed in association with brush piles and downed trees.

23. *Eumeces inexpectatus* (Southeastern five-lined skink) – [A]

One individual was observed under a decaying log.

24. *Sceloporus undulatus hyacinthinus* (Northern fence-lizard) – [D]

One individual was observed in a brush pile.

25. *Scincella lateralis* (Little brown skink) – [B, F]

Two individuals were observed.

26. *Carphophis amoenus amoenus* (Eastern wormsnake) – [A, B, C, D, E, F]

Twenty-two adults were observed in and under decaying logs. Three of these were measured and weighed (Table 4).

Table 4. Length and weight of three eastern wormsnakes observed during the survey.

SVL (mm)	Total Length (mm)	Weight (g)
157	191	4.5
220	250	10.0
250	275	10.3

27. *Diadophis punctatus* (Ring-necked snake) – [C]

Six adults were observed, all with complete neck rings and with midventral lines lacking 'half-moon' patterns, suggesting these individuals were not intergrades, but rather the northern subspecies, *D. p. punctatus* (northern ring-necked snake).

28. *Storeria occipitomaculata occipitomaculata* (Northern red-bellied snake) – [D]

One gravid female was observed under a log. This individual measured 150 mm SVL and 200 mm total length, and weighed 4 g.

29. *Thamnophis sirtalis sirtalis* (Eastern gartersnake) – [F]

One individual was observed in upland woods habitat. The individual measured 600 mm SVL and 790 mm total length, and weighed 235 g.

Species observations are summarized below (Table 5) for each of the seven resource areas surveyed. Likely county records are based on Mitchell and Reay (1999), and the Virginia Department of Game and Inland Fisheries Collections Database (DGIF- FWIS). Sampling intensity was highly variable among survey areas (Table 5).

Table 5. Summary of species observed at each of the seven resource areas surveyed (X = species observed, C = potential county record).

Species	Belle Isle	Big Island	Bush Mill	Chilton-Dilliston	Hickory Hollow	Hughlett Point	Lively YMCA
Ambystoma maculatum	X						
Ambystoma opacum	X	X		X			
Eurycea cirrigera		X			X		
Plethodon cinereus						X	
Plethodon cylindraceus		C					
Acris c. crepitans	X	C		X			
Bufo a. americanus			X	X	X		
Bufo fowleri		C	X	X			
Gastrophryne carolinensis	X						X
Hyla chrysoscelis	X	C					X
Hyla cinerea	X						
Rana catesbeiana	X	C		X			X
Rana clamitans	X			X	X		
Rana palustris					X		
Scaphiopus holbrookii	X						X
Chelydra s. serpentina	C			C			
Chrysemys p. picta	X	X		X			
Kinosternon s. subrubrum	C						
Pseudemys rubriventris		X					
Sternotherus odoratus		C					
Terrapene c. carolina		C	X		X		
Eumeces fasciatus		X			X		X
Eumeces inexpectatus	X						
Sceloporus undulatus hyacinthinus							X
Scincella lateralis			X	X			

Table 5 (continued).

Species	Belle Isle	Big Island	Bush Mill	Chilton-Dilliston	Hickory Hollow	Hughlett Point	Lively YMCA
Carphophis a. amoenus	X	C	X	X	X		X
Diadophis punctatus					X		
Storeria o. occipitomaculata							X
Thamnophis s. sirtalis			X				
Total Number of Species	14	14	6	10	8	1	8
Total Amphibian Species	9	8	2	6	4	1	4
Total Reptile Species	5	6	4	4	4	0	4
Manhours of Survey Effort	27	4	30	28	10	1	16
Number of Hoop Net Sets	-	3	-	2	-	-	-

Discussion

The minimal effort required to obtain 11 potential county records (Table 5) during the survey, and a quick reference to Mitchell and Reay (1999), indicate that additional sampling effort is required on the Northern Neck and Middle Peninsula in order to develop a more complete understanding of the distributional patterns of Virginia's herpetofauna. Photo vouchers exist for many of the potential county records observed, and, after further research to verify the lack of voucher records for these species, accounts will be published.

All *Diadophis punctatus* observed had complete neck-rings and no 'half moon' markings on the midventral line, an indication that these were not intergrades, but *D. p. punctatus*, the northern subspecies (Mitchell, 1994). The region in which this survey was conducted is currently considered to be within the intergrade zone for the northern and southern subspecies (Mitchell and Reay, 1999). Further survey work is needed to better determine this intergrade zone.

The cool temperatures, and overcast skies of 20 May 2000, were not conducive for surveying reptiles. Further sampling would better determine the occurrence of these species on the resource areas surveyed.

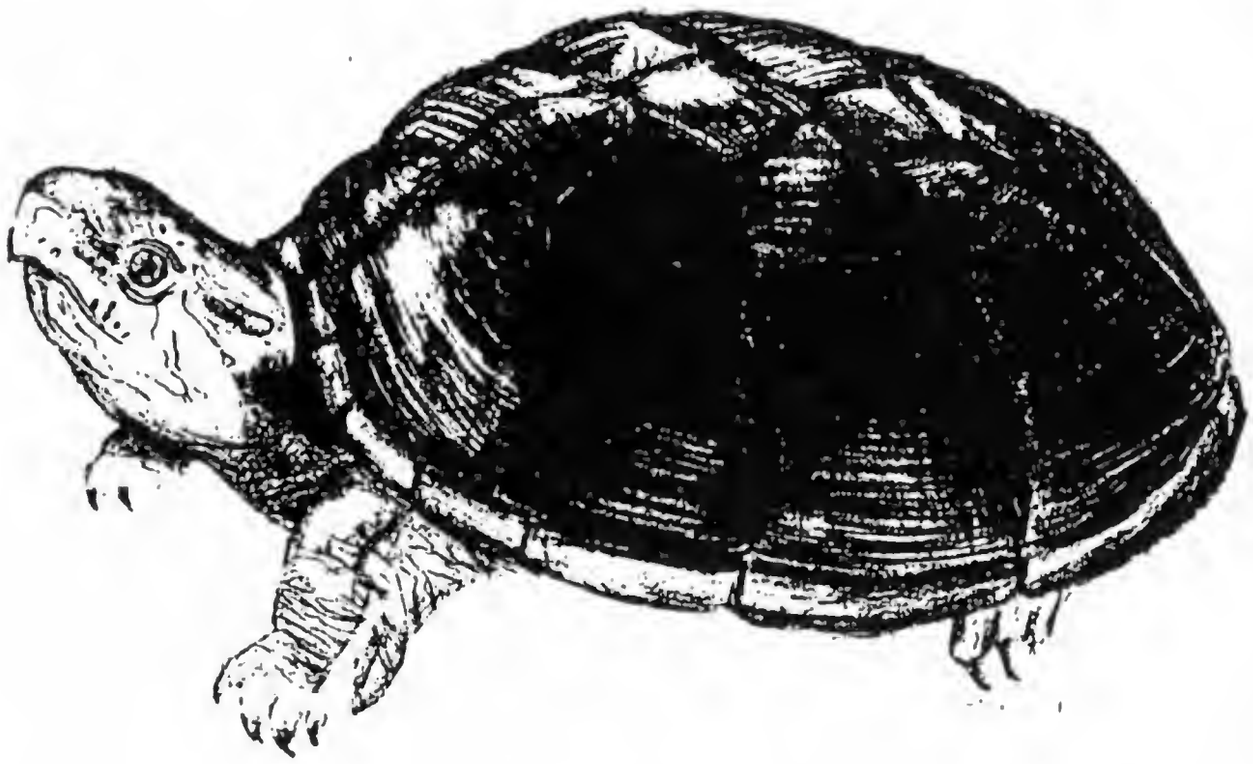
Acknowledgments

The following individuals participated in this survey; Henry Bashore, Dean Bohon, Jack Boswell, John Boswell, Mitch Bowling, Dave A. Dawson, David L. Dawson, Lora Devan, Andy Eckhert, Faye Farrell, Whitney Farrell, Jason Gibson, Bob Greenlee, Sarah Greenlee, Mike Hayslett, Dana Johnson, Don Mackler, Ann Messick, Jeff Peacock, Mike Pinder, Steve Roble, Brian Sangutei, Abigail Sattler, Paul Sattler, Ellis Squires, Meredith Thompson, Debbie Troutman, Amy White, Chanise White, J. White, John White, Christine Wiggington, Eric Wilhelm, David Wold, and Matt Wold. Individuals inadvertently unnamed above participated in this survey as well. Thanks to Henry Bashore for his assistance with site selection; his knowledge of the resources in the region was invaluable in determining survey areas. Thanks to Teta Kain and Friends of Dragon Run for providing access to the Big Island property.

Literature Cited

Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.

Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries Special Publication Number 1, Richmond, Virginia. 122 pp.



Eastern Mud Turtle (*Kinosternon subrubrum subrubrum*). Drawing by Sarah Church, Pocahontas Middle School, Powhatan, Virginia.

Turtle Mortality in Powhatan County, Virginia

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Turtles are one of the most successful groups of reptiles. They have existed on Earth for more than 200 million years (Zug, 1993), yet today the order Testudines is one of the most threatened groups of vertebrates. Recently in Virginia, much attention has been given to the declining populations of wood turtles (Mitchell and Pilcicki, 2000) and bog turtles (Mitchell, 1994), but what about the other turtles found in Virginia? Non-listed species of turtles are being diminished by the same threats as endangered and threatened turtles. Increased suburbanization, habitat fragmentation, and road building results in smaller populations and creates a greater threat of local extirpation. Well-documented factors involved in turtle declines include pollution (Ernst, 1997), collection for the pet trade (Ernst et al., 1994), habitat destruction and fragmentation (Klemens, 1997), and in this article, road mortality. Every year many turtles are killed on the roads of Virginia. Exactly how many and what damage this does to turtle populations is unknown. What is known, though, is that each turtle killed reduces genetic diversity, diminishes potential for dispersal to new locations, decreases reproductive capacity, and leads to a decrease in the overall population.

In a limited time period of two years (April 1999 to June 2001), I made observations of road-killed turtles in Powhatan County, Virginia. Information gathered was limited to species identification, date of observation, and habitat surrounding the road where DOR (dead on road) turtles were found. Data were collected during my drive to and from work (approximately 30 miles round trip), but observations were not limited to this time period.

All six species of turtles recorded from Powhatan County (Gibson, 2001) were found road-killed during this survey. In total, 35 DOR turtles were observed (Table 1). *Terrapene carolina carolina* (eastern box turtle) was the most common species of road-killed turtle, accounting for 54% of all

observations. Turtles in Powhatan County were found to be most sensitive to vehicular traffic during the months of May and June (Table 2).

Table 1. Annual summary of road-killed turtles found in Powhatan County.

Species	1999	2000	2001	Total
Chelydra serpentina serpentina	0	1	0	1
Chrysemys picta picta	1	0	0	1
Pseudemys concinna	0	4	0	4
Terrapene carolina Carolina	4	10	5	19
Kinosternon subrubrum subrubrum	4	3	2	9
Sternotherus odoratus	1	0	0	1
Total	10	18	7	35

Table 2. Monthly summary of road-killed turtles found in Powhatan County.

Year	April	May	June	July	Aug.	Sept.
1999	0	2	1	3	3	1
2000	0	4	10	1	2	1
2001	1	2	4	-	-	-
Total	1	8	15	4	5	2

Below is a species list with dates on which DOR turtles were found and descriptions of habitats surrounding kill sites.

Species Accounts

1. *Chelydra serpentina serpentina* (Common snapping turtle)

Only one snapping turtle was found road-killed. This animal was found on a road near a farm pond on 16 June 2000. Several large turtles were collected alive on roads and taken to less dangerous areas. Road mortality of this species was not documented in Mitchell (1994) or Ernst et al. (1994).

2. *Chrysemys picta picta* (Eastern painted turtle)

One DOR painted turtle was observed on 24 May 1999. A swamp and small stream comprised the habitat surrounding the road.

3. *Pseudemys concinna* (River cooter)

Four DOR river cooters were observed on 10 and 21 May, 13 June, and 7 August 2000. All animals were found on roads adjacent to large ponds. The late date of 7 August may represent late nesting activity or normal terrestrial movement. Mitchell (1994) also found river cooters on highways outside of the normal mating and nesting period.

4. *Terrapene carolina carolina* (Eastern box turtle)

Many eastern box turtles were collected alive on the road and moved to safer locations, but 19 road-killed turtles were observed during the survey period. Box turtles were found on roads that crossed through various habitats including old field succession, mature hardwood forests, swamps, and small streams. Specimens were observed in 1999 on 22 May, 3 July, 29 August, and 20 September, in 2000 on 14 May, 3, 16, 18(2), 19, and 23 June, 1 July, 6 August, and 6 September, and in 2001 on 21 May and 2, 5, 9, and 22 June.

5. *Kinosternon subrubrum subrubrum* (Common mud turtle)

Mud turtles were found on roads that were near swamps and on roads that crossed small streams. DOR turtles were found in 1999 on 13 June, 9 July, 6 and 29 August; in 2000 on 14 May, 10 and 13 June; and in 2001 on 14 April and 21 May. This terrestrially active turtle seems sensitive to vehicular traffic from April to August.

6. *Sternotherus odoratus* (Stinkpot)

One road-killed stinkpot was collected on 17 July 1999. This turtle was found on a road that crossed a small stream. Neither Mitchell (1994) nor Ernst et al. (1994) mention road mortality for this species.

Discussion

Road mortality is yet one more assault on populations of turtles. Turtles seem most susceptible to vehicular traffic during the mating and nesting seasons and in areas adjacent to wetlands and woodland forests. For managers or conservation groups working with these reptiles, life history

data and locations of large populations can lead to ways to protect turtles from being killed on roads. More documentation and data are needed in this effort to reduce the effects of road mortality on Virginia's native turtle fauna.

Acknowledgments

I thank Carl H. Ernst, Steven M. Roble and an anonymous reviewer for reviewing an earlier draft of this manuscript. This paper is dedicated to my parents.

Literature Cited

Ernst, C.H. 1997. Shell erosion and skin lesions in turtles. Virginia Herpetological Society Newsletter 7(2): 1-2,10.

Ernst, C.H., J.E. Lovich, and R.W. Barbour. 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington, D.C. 578 pp.

Gibson, J. D. 2001. Amphibians and reptiles of Powhatan County, Virginia. Catesbeiana 21(1): 3-28.

Klem[m]ens, M. W. 1997. A community-based approach to turtle conservation. Virginia Herpetological Society Newsletter 7(1): 1-3.

Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.

Mitchell, J. C. and J. Pilcicki. 2000. The wood turtle (*Clemmys insculpta*) in eastern Fairfax County, Virginia. Catesbeiana 20(1): 34-38.

Zug, G. R. 1993. Herpetology: An Introductory Biology of Amphibians and Reptiles. Academic Press, San Diego, CA. 527 pp.

Sensitivity of Spotted Salamander (*Ambystoma maculatum*) Embryos to UV-B Radiation in Central Virginia

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Worldwide, many amphibian populations have been declining and undergoing range reductions (Blaustein et al., 1998; Houlahan et al., 2000; Alford et al., 2001). Causes for the declines are often difficult to determine but fungal infections, habitat destruction, changes in local climate, pollution and increased ultraviolet (UV-B) radiation have been listed as potential causes (Blaustein and Wake, 1995; Houlahan et al., 2000). Most studies for assessing effects of UV-B radiation on amphibians occurred in Australia, Europe or northwest United States (Blaustein et al., 1998) and only one has been conducted in the eastern United States (Starnes et al., 2000). Several of these studies have included ambystomatid salamanders (*Ambystoma macrodactylum* and *A. gracile*) and an adverse UV-B effect on embryonic survival has been demonstrated (Blaustein et al., 1995, 1998). In contrast, Starnes et al. (2000) did not show a statistically significant UV-B effect on *A. maculatum* embryonic survival although decreased incidence of deformities was noted for embryos shielded from UV-B. Our goal was to determine if the results from Starnes et al. (2000) apply to *A. maculatum* populations in Virginia.

Materials and Methods

Ten egg masses of the clear jelly type (Hardy and Lucas, 1991) were collected from a ditch in a dirt road near Riverville, Amherst County, Virginia on 24 February 2001. The egg masses were returned to the laboratory and kept at 4 C for 3 days until placement in the experimental units on 27 February. Counts were made of the number of embryos per egg mass and the embryonic developmental stage was determined using the scale by Harrison (1969). Egg masses were randomly assigned to numbered plastic cases that were either shielded (n = 5) with Luminar/Plexiglas shields (shields completely block wavelengths below 380 nm and therefore UV-B radiation [280-320 nm], Lizana and Pedraza, 1998) or left exposed to sunlight using plastic mesh covers (n = 5). Each

egg masses and a styrofoam 'skirt' to keep the case afloat. A completely randomized design was used to place the cases in a linear array in an exposed location in a lake near Liberty University, Lynchburg, Virginia.

During the field experiment, one egg mass was lost when a storm blew off the Luminar/Plexiglas shield and two other cases lost their styrofoam skirts at the end of the experiment; thus, some larvae were able to escape from these cases. After hatching, all egg masses and live larvae were removed to the laboratory. Mortality was assessed as eggs that did not hatch. Live larvae were anesthetized, preserved in formalin and then examined for deformities.

Percent survival and deformities for shielded and unshielded egg masses were analyzed using t-tests. Because of the small sample size, when the null hypothesis was not rejected a power analysis was done to see how large a sample size would be needed to conclude the effect was significant at $\propto = 0.05$ and power = 0.8. If the sample size needed was large, we concluded the effect was not significant. If the sample size was small, then the failure to reject the null hypothesis (H_0: average for unshielded egg masses = average for shielded egg masses) would likely be attributable to small sample size (Gregory, 2001). Methods used for calculating power and sample size were from Zar (1996).

Results and Discussion

The number of embryos per egg mass ranged from 17 to 106 with an average of 51 embryos. The embryos were at Harrison stages 6-8 (cleavage stages to early blastula or approximately 20-30 hours old) when the egg masses were placed in the field (27 February). Hatching was completed by 17 April 2001. Percent survival averaged 96.5 and 97.8 for shielded and unshielded egg masses, respectively, and these were not significantly different ($t = 0.4$, d.f.= 7, $P = 0.7$, Table 1). All unshielded egg masses produced deformities, whereas only one of the shielded egg masses did so. The average percent deformities of 0.4 and 1.2 for shielded and unshielded egg masses, respectively, were not significantly different ($t = 1.4$, d.f.= 5, $P = 0.2$, Table 1).

Table 1. Percent survival and deformity for spotted salamander (*Ambystoma* maculatum) embryos exposed to and shielded from UV-B radiation. Means are followed by one standard deviation.

Case Types	% Survival	% Deformities
Shielded	100	0
	100	1.7
	100	0
	86.1	0
	----[A]	----[A]
	96.5 ± 7.0	0.4 ± 0.9
Unshielded	100	0.9
	94.3	0.9
	94.6	1.8
	100	----[B]
	100	----[B]
	97.8 ± 3.0	1.2 ± 0.5

A) Egg mass lost during storm.
B) Percent deformities could not be assessed due to missing larvae since cases which lost styrofoam skirts allowed for newly hatched larvae to escape.

Power analysis of the survival data indicated that a sample size of 235 for each treatment would have been required to reject the null hypothesis. Taking into consideration the large sample size that would have been needed in addition to the higher survivorship being with the unshielded treatment, we would conclude that the UV-B effect on survivorship was really not significant. In contrast, for percent deformities, the sample size needed would have only been 14 egg masses per treatment. It is likely that our lack of rejecting the null hypothesis was due to small sample size.

Our results follow those of Starnes et al. (2000) indicating there is no statistically significant evidence that UV-B increases either mortality or deformities in developing spotted salamander embryos. For percent

deformities, Starnes et al. (2000, Figure 1) showed a decline from approximately 6% to 3% for clear egg masses (n=10/treatment) unshielded and shielded (98% UV-B blocking treatment), respectively. Perhaps if they had used a larger sample size, the null hypothesis for percent deformities would have been rejected. The question of biological significance would, though, still need to be addressed since the overall deformity rates were below 10% for all treatments both in this study and in Starnes et al. (2000).

The high survivorship and low rates of deformity may be due to various factors which reduce the risk of developing embryos to UV-B such as DNA repair mechanisms, reduced transmission of UV-B due to the jelly surrounding the embryo, cloud cover, and water turbidity (Hatch and Burton, 1998; Starnes et al., 2000). Even though the risk of UV-B to *A. maculatum* embryos appears minimal at this time, we consider it prudent that Virginia amphibian species that lay eggs in exposed sites be monitored for UV-B effects. There may be species-specific and/or locational differences in risk to UV-B. For example, UV-B increased *Hyla chrysoscelis* and *Pseudacris triseriata* embryonic deformity rates (Starnes et al., 2000). In addition, pollutants in some locations might work in a synergistic fashion with UV-B similar to that noted by Hatch and Burton (1998). They found photoinduced toxicity of fluoranthene (a polycyclic aromatic hydrocarbon) on spotted salamander larvae. Therefore, research on the effects of UV-B on amphibian reproductive success in a variety of locations in Virginia is encouraged.

Acknowledgments

We would like to thank the students of the 1999 Environmental Biology class at Liberty University for the construction of the cases and the 2001 class for their aid in the setup of the cases at the site on Lake Hydaway. We would also like to thank the staff at Thomas Road Baptist Church for the use of their property for the performance of this study.

Literature Cited

Alford, R., P. Dixon, and J. Pechmann. 2001. Global amphibian population declines. Nature 412: 499-500.

Blaustein, A., B. Joseph, and J. Keisecker. 1995. Ambient ultraviolet radiation causes mortality in salamander eggs. Ecological Applications 5: 740-743.

Blaustein, A., J. Kiesecker, D. Chivers, D. Hokit, A. Marco, L. Belden, and A. Hatch. 1998. Effects of ultraviolet radiation on amphibians: Field experiments. American Zoologist 38: 799-812.

Blaustein, A. and D. Wake. 1995. The puzzle of declining amphibian populations. Scientific American 272: 52-57.

Gregory, P. 2001. Feeding, thermoregulation, and offspring viability in gravid garter snakes (*Thamnophis sirtalis*): What makes laboratory results believable. Copeia 2001: 365-371.

Hardy, L. and Lucas, M. 1991. A crystalline protein is responsible for dimorphic egg jellies in the spotted salamander, *Ambystoma maculatum* (Shaw)(Caudata: Ambystomatidae). Comparative Biochemistry and Physiology 100: 653-660.

Harrison, R. 1969. Harrison stages and description of the normal development of the spotted salamanders, *Ambystoma punctatum* (Linn.). Pp 44-66 in Harrison, R. ed. Organization and Development of the Embryo. Yale University Press, New Haven, CT.

Hatch, A. and G. Burton. 1998. Effects of photoinduced toxicity of fluoranthene on amphibian embryos and larvae. Environmental Toxicology and Chemistry 17: 1777-1785.

Houlahan, J., C. Findlay, B. Schmidt, A Meyer and S. Kuzmin. 2000. Quantitative evidence for global amphibian declines. Nature 404: 752-755.

Lizana, M. and E. Pedraza. 1998. The effects of UV-B radiation on toad mortality in mountainous areas of Central Spain. Conservation Biology 12: 703-707.

Starnes, S., C. Kennedy, and J. Petranka. 2000. Sensitivity of embryos of

southern Appalachian amphibians to ambient solar UV-B radiation. Conservation Biology 14: 277-282.

Zar, J. 1996. Biostatistical Analysis. 3rd ed. Prentice Hall, Upper Saddle River, NJ. 662pp.

Guidelines for VHS Field-Study Grants

The purpose of Field-study Grants from the Virginia Herpetological Society is to stimulate and encourage herpetological research in Virginia. These Grants will be in variable amounts up to $200.00 and are available to VHS members who do not have access to other sources of funding, such as institutions of higher learning and government grants.

Grant requests should include a description of the proposed research, or in the case of surveys the extent of the geographic area to be surveyed, and the methods which are to be used. A rough budget would be helpful. A brief justification of the importance of the work in contributing to the knowledge of Virginia's herpetofauna, citing standard works (e.g., Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.; Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond, Virginia. 122 pp.; and Tobey, F. J. 1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society, Privately Printed, Purcellville, Virginia. 114 pp.) should be included. The results of all funded surveys must be submitted in manuscript form for publication in *Catesbeiana*.

Grant requests will be received by the current President until March 15 of each year. The President will then send copies to Executive Committee members by the end of March, and a Committee vote will be scheduled sometime during the annual Spring meeting. The Executive Committee will first determine that funds are available, and then that the Grant request is worthy of funding. A majority ruling is required for both votes. When a grant is approved, the Secretary/Treasurer will so inform the recipient, send a check for the amount determined by the Committee, and inform the recipient of the requirement to publish the results in *Catesbeiana*.

FIELD NOTES

***Bufo fowleri* (Fowler's Toad).** VA: Warren Co., Shenandoah River at Co. Rt. 613 ("Indian Hollow Road"). 15 and 30 July 2001. John White & family.

An adult Fowler's toad was captured at 0935 h on 15 July 2001 while hopping across a gravel path in front of the main building of Shenandoah River Trips. On a return trip to the area on 30 July 2001 two juvenile *B. fowleri* were found. According to Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No.1, Richmond, Virginia. 122 pp.) and Tobey (1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Survey, Purcellville, Virginia. 114 pp.), *B. fowleri* has not been previously recorded in Warren County. Slides have been sent to the Virginia Museum of Natural History.

JOHN WHITE
2815 N. Van Buren Street
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***Pseudemys rubriventris* (Northern Red-bellied Cooter).** VA: Warren Co., Shenandoah River at Co. Rt. 613 ("Indian Hollow Road"). 15 July 2001. John White & family.

A juvenile northern red-bellied cooter was captured at 1330 h on 15 July 2001 while basking in the Shenandoah River. According to Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1,Richmond, Virginia. 122 pp.), Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington D.C. 352 pp.) and Tobey (1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Survey, Purcellville, Virginia.114 pp.), *P. rubriventris* has not been previously recorded in Warren County. Slides have been sent to the Virginia Museum of Natural History.

JOHN WHITE
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***Chrysemys picta picta* (Eastern Painted Turtle).** VA: Pittsylvania Co., White Oak Mountain Wildlife Management Area. 5 and 9 July 2001. Jason D. Gibson.

On 5 and 9 July 2001, two dried shells and one dead floating specimen of the eastern painted turtle were collected along the margin of Pete's Pond, a man-made fishing pond located on White Oak Mountain Wildlife Management Area. This is the first vouchered record for this species from Pittsylvania County (Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.; Mitchell, J. C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond Virginia. 122 pp.). The shell found on 5 July had a plastron length of 89 mm, the carapace was crushed and could not be measured. The dried shell found on 9 July had a carapace length of 133 mm and a plastron length of 120 mm. The dead, floating turtle had a carapace length of 141 mm, plastron length of 122 mm, and a tail length of 270 mm. The beak was crushed. A leech was attached to the submerged side of the turtle shell. Many humans frequent this area to fish and may cause the death of some turtles that are caught and killed in the process of hook removal.

A dried turtle shell will be deposited in the Virginia Museum of Natural History.

JASON D. GIBSON
Blairs Middle School
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***Scaphiopus holbrookii* (Eastern Spadefoot).** VA: Pittsylvania Co., White Oak Mountain Wildlife Management Area. 11 July 2001. Jason D. Gibson.

At 1910 h on 11 July 2001, an eastern spadefoot metamorph (16 mm SVL) was found foraging in leaf litter. Two vernal pools created from road ruts and a third pool created from a road damming a natural drainage area are found adjacent to the capture site. The surrounding forest canopy

is dominated by mature oaks, hickories, and sweetgums. The understory and forest floor are comprised of ironwoods, red maples, sphagnum moss and fern moss. Spotted and marbled salamanders and upland chorus frogs live sympatrically in this location. Observations of the spadefoot toad are highly sporadic in south-central and southwestern Virginia (Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond Virginia. 122 pp.). This observation helps extend the south-central known range of this species in Virginia and reduces the gap between localities in Montgomery County (westernmost known records in Virginia) and sites in central Virginia. Many of the roads and hiking paths throughout White Oak Mountain Wildlife Management Area are riddled with potholes and road ruts that provide excellent breeding habitat for many amphibians. Wildlife management area managers and the public using these lands need to be educated about the value that ditches, potholes, and road ruts play in providing breeding habitat for these animals.

This is the first vouchered record for this species from Pittsylvania County (Mitchell and Reay, op. cit.). A color slide will be deposited in the Virginia Museum of Natural History.

JASON D. GIBSON
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Scaphiopus holbrookii from Pittsylvania County
Photo by Jason D. Gibson

***Bufo americanus* (American Toad).** VA: Sussex Co., Chub Sandhill Natural Area Preserve, Co. Rt. 631, ca. 0.8 km NE of Nottoway River bridge. 24 April 2001. Steven M. Roble and Christopher S. Hobson.

There are very few records for the American toad in extreme southeastern Virginia (Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond Virginia. 122 pp.; Roble, S. M. 2000. Field Notes: *Bufo americanus* [American Toad]. Catesbeiana 20: 79). During the evening of 24 April 2001 we collected an adult male American toad on County Route 631 where it bisects the Chub Sandhill Natural Area Preserve. Fowler's toads (*Bufo fowleri*) were very common on this date but we noted only the one American toad. This is the first documented record of *B. americanus* in Sussex County (Mitchell and Reay, op. cit.).

A breeding chorus of *B. americanus* was heard by C. S. Hobson in March 2000 approximately 4.5 km NE of the above site near the junction of Virginia Route 35 and County Route 622 ("Littleton" on maps), but no specimens, photographs, or tape recordings were obtained on that date.

The voucher specimen will be deposited in the Virginia Museum of Natural History.

STEVEN M. ROBLE and **CHRISTOPHER S. HOBSON**
Virginia Department of Conservation and Recreation
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***Dermochelys coriacea* (Leatherback).** VA: Northampton Co., Hog Island. 15 May 1990. Ruth A. Beck, Kurt A. Buhlmann, Caren A. Caljouw, Timothy J. O'Connell, Stephen R. Johnson and others.

The leatherback, the largest sea turtle in the world, is frequently observed at the mouth of the Chesapeake Bay during spring and summer (Keinath et al. 1987. Aspects of the biology of Virginia's sea turtles: 1979-1986. Virginia Journal of Science 38: 329-336). Some individuals have also

been found in the Bay and along the Atlantic side of the barrier islands (Keinath, J. A. and J. A. Musick. 1991. Leatherback sea turtle. Pp. 453-455 in K. Terwilliger [coordinator]. Virginia's Endangered Species. McDonald & Woodward Publishing Co., Blacksburg, VA; Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.). Conant et al. (1990. Herpetofauna of the Virginia Barrier Islands. Virginia Journal of Science 41: 364-380) reported that leatherbacks had been recorded from only four of the barrier islands: Assateague, Parramore, Smith and Wreck. Mitchell (op. cit.) plotted a fifth barrier island locality that appears to be at the south end of Cobb Island. He also misplotted the unvouchered Parramore Island record on Hog Island.

The above-named field party of biologists (plus several other unknown persons) from the College of William and Mary (Beck), Virginia Commonwealth University (Johnson) and the Division of Natural Heritage (DNH), Virginia Department of Conservation and Recreation (Buhlmann, Caljouw and O'Connell) found the washed up carcass of an adult leatherback on the north end of Hog Island on 15 May 1990. Ten color slides of this specimen are contained in the DNH slide collection. Annotations on the slides indicate that the carapace was 57 inches (1448 mm) long and 43 inches (1092 mm) wide and the plastron was 47.75 inches (1213 mm) long and 35 inches (889 mm) wide. My efforts to locate field notes from this survey, which might have indicated the suspected cause of death of the specimen as well as identify other members of the field party, in the DNH files were unsuccessful.

This is the first documented record of *D. coriacea* from Hog Island.

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President's Corner

It's hard to believe four years have gone by since I first stepped into the role of VHS President-Elect. Serving as an officer in VHS has provided me with an opportunity to meet a number of fascinating individuals, all of whom share a common interest in, what to most folks would be, a rather unique taxonomic group. During these years the Society has conducted surveys in the Alleghany Mountains (Clinch Mountain WMA – 1998), the Piedmont (Prince Edward-Gallion State Forest, Twin Lakes State Park, and the Boswell Tract – 1999), the Coastal Plain (several state Natural Area Preserves and Belle Isle State Park - 2000), and the Blue Ridge (Loves Run and Green Pond – 2001), quite a diverse array of geography and habitat. As I reflect on these surveys and fall meetings (which provide a unique opportunity for information exchange), it is with the knowledge that this was just a four-year snapshot of a Society which, founded in 1958, has contributed much to the understanding of the herpetofauna of Virginia. The magnitude of ongoing habitat destruction and other threats impacting reptile and amphibian populations in Virginia make it imperative that herpetologists of all ages and levels of expertise remain vigilant and commit to an active role in the Society. As a society of individuals interested in the conservation and study of reptiles and amphibians, VHS members will need to focus, with renewed energy, efforts to educate the public about the unique herpetofauna of Virginia.

Thanks to biologists Dawn Kirk and Fred Huber of the U.S. Forest Service for helping to coordinate the VHS survey of the Loves Run sinkhole complex and Green Pond this past May. Those who surveyed the Loves Run sinkhole pond complex near the Maple Flats complex experienced a unique mountain habitat type which supports a number of plant species associated with the Coastal Plain and lower Piedmont. Thanks also to Augusta County for providing an excellent meeting facility for the Society's spring business meeting.

This spring, during our business meeting in Verona, VHS members voted to modify the By-laws of the Society (as described in detail in the VHS Spring 2001 Newsletter). The changes should encourage a broader spectrum of VHS members to serve as officers of the Society. You now can serve as either President or Vice President, with only a two-year commitment of energy and time. So give serious thought to serving as an officer of the Society beginning NOW! VHS can only continue to thrive with fresh minds guiding it.

Bob Greenlee, VHS President

Minutes of the VHS Spring Meeting

May 18, 2001
Verona, Virginia

Bob Greenlee opened the meeting at 7:15 pm. The minutes of the Fall 2000 meeting were accepted as printed in *Catesbeiana* 21(1). The Treasurer's Report was accepted as printed in *Catesbeiana* 21(1). For the Newsletter Editor's Report, Bob announced that since Laura Williams is working on a graduate degree she will no longer be available to fill the position of Newsletter Editor. Shelly Miller volunteered for the position and was appointed by the President. Please send any appropriate materials to Shelly at smiller@dgif.state.va.us. Steve Roble gave the *Catesbeiana* Editor's report via email. A total of 120 copies of volume 21(1) were printed with 155 mailed for a total cost of $505.06. The VHS Web Site report consisted of thanks to John White for keeping it so up to date.

Bob Greenlee presented changes to the VHS By-laws as printed in the Newsletter. The first would remove the stipulation that the President-elect would assume the office of President. The President-elect would be called the Vice-President and serve a two-year term. The office of the President would be filled by a vote taken every two years. The second change would remove Article II. Section 4.d as it conflicts with Article III. Section 3. The changes were approved by a voice vote.

Possible meeting sites for the Fall 2001 meeting were discussed, including Northern Virginia Community College and George Mason University. The Snake Brochure was presented to the Membership. The funds donated by the VHS helped in its production and the Virginia Department of Game and Inland Fisheries provided copies to us. Members can pick up a free copy at any of the meetings. It was mentioned that this is just the first printing, with many more to come. The VHS will receive free publicity on each of these copies in each of the printings.

After a break for refreshments, Jason Gibson presented a slide show on the amphibians and reptiles that might be expected at the survey sites in Augusta County.

Paul Sattler
VHS Secretary/Treasurer

Treasurer's Report
October 2001

Previous Checking Balance	**$4150.60**
Receipts:	
April Memberships	$135.00
May Memberships	$385.00
July Memberships	$ 31.00
August Memberships	$ 95.00
September Memberships	$ 20.00
Total Receipts	$666.00
Disbursements:	
Catesbeiana 21(1)	$505.06
Spring Meeting Collecting Permit	$ 40.00
Spring Meeting Postage	$ 3.80
Spring Meeting Refreshments	$ 20.36
September Newsletter	$287.11
Total Disbursements	$856.33
Balance on Hand October, 2001	
Checking	**$3960.27**

Dues Reminder

Membership in the Virginia Herpetological Society is on a calendar year basis (expires annually on December 31). Please consider renewing your membership for 2002 now to save our treasurer the time and expense needed to mail you a renewal notice. **Check the date on your mailing label to determine the year through which you have paid dues.** More than a quarter of the members receiving this bulletin have not yet paid their 2001 dues! We encourage those individuals to pay dues for both 2001 and 2002. See the last page of this bulletin for the membership application/renewal form. Save postage by paying your dues at the Fall Meeting if you are planning to attend this exciting event.

ANNOUNCEMENT
FALL 2001 MEETING
VIRGINIA HERPETOLOGICAL SOCIETY

The VHS will hold its fall meeting on Saturday October 27, 2001 at the Annandale Campus of Northern Virginia Community College. This is the first time in many years that we have met in northern Virginia and we are looking forward to seeing members from this area. The meeting will include a raffle, silent auction, photo contest, paper session, and teacher workshop.

Dr. George Zug will be our special speaker this year. Dr. Zug is an author, researcher, and curator of herpetology at the National Museum of Natural History, Smithsonian Institution. He will be making a presentation entitled "Can Bones Tell Time." In this lecture he will discuss the techniques and information he has obtained on skeletochronology of sea turtles. Dr. Zug will also be available to sign books.

We are still looking for other presenters, If you would like to present a paper during the afternoon session, please call Jason Gibson at (804) 724-9034 or e-mail him at (frogman31@earthlink.net). Presentations should be about 15-20 minutes in length. A title or short description should be made available in advance to Jason, so a schedule of presenters can be arranged.

Please bring any books, posters, or other artifacts related to herpetology that you would like to donate to the silent auction and raffle. Photo contest participants in the past have been few. John White would like to have some competition this year so bring out your best herp photos.

George Zug, John White, Kathy Quindlen, Mike Pinder, and Jason Gibson will conduct this year's teacher workshop. During this four-hour workshop, teachers will have the opportunity to learn what amphibians and reptiles live in Virginia, how to use amphibians and reptiles to teach evolution, reptile and amphibian identification, internet sources available on amphibians and reptiles, endangered species and laws that protect these creatures, and captive care and handling of these animals. During this workshop teachers will also have the opportunity to view and hold live reptiles and amphibians. Each participant will receive resource

participants, so sign up early. For more information on this workshop please contact Jason Gibson at (804) 724-9034 or e-mail him at (frogman31@earthlink.net).

MEETING AGENDA

8:00 - 12:00	Educational workshop for teachers
11:00 a.m.	Business meeting Topics: ▪ Elections ▪ Possible spring survey sites
12:00 p.m.	Lunch (Pizza Hut is located only a few blocks from the college campus)
1:00 p.m.	Paper sessions Silent auction Photo contest winners

Directions to Annandale Campus

From the south - Take I-95 north to I-495 west. From I-495 take Route 236 west to the Annandale Campus.

From the west - Take I-66 east to Route 236 east. Follow Route 236 east to the Annandale Campus.

The business meeting and paper session will be held in room Cs 128 in the Shuler Building (CS building). The Educational workshop for teachers will meet in room Cs 105 in the Shuler building (CS building).

For more information and a campus map visit the VHS web site at **http://fwie.fw.vt.edu/VHS/2001_vhs_fall_meeting.htm_** or the Annandale Campus web site at **http://www.nv.cc.va.us/annandale/.** The campus address is 8333 Little River Turnpike, Annandale, Virginia. Telephone number (703) 323-3000.

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Leesburg
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COUNTY
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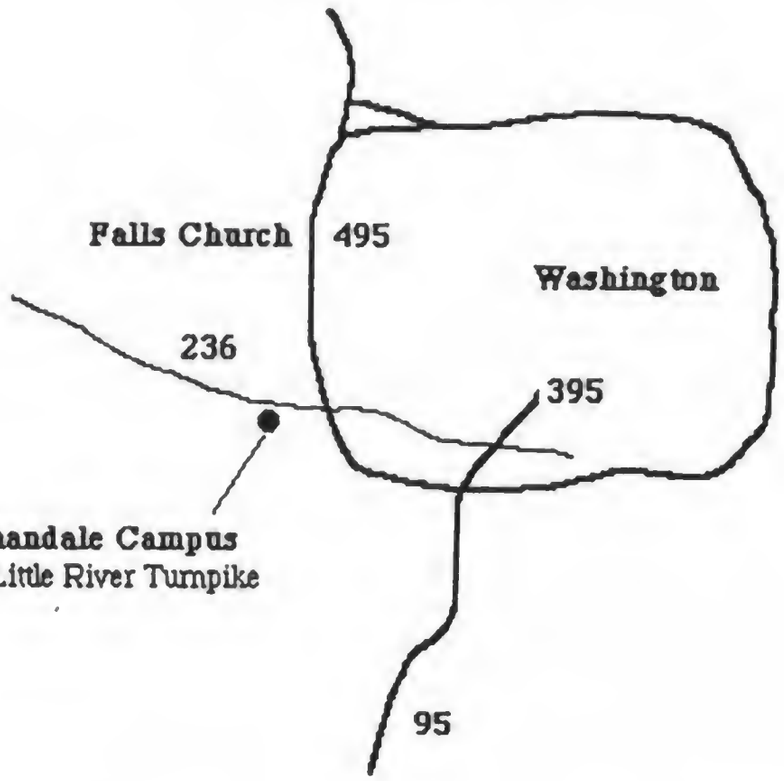

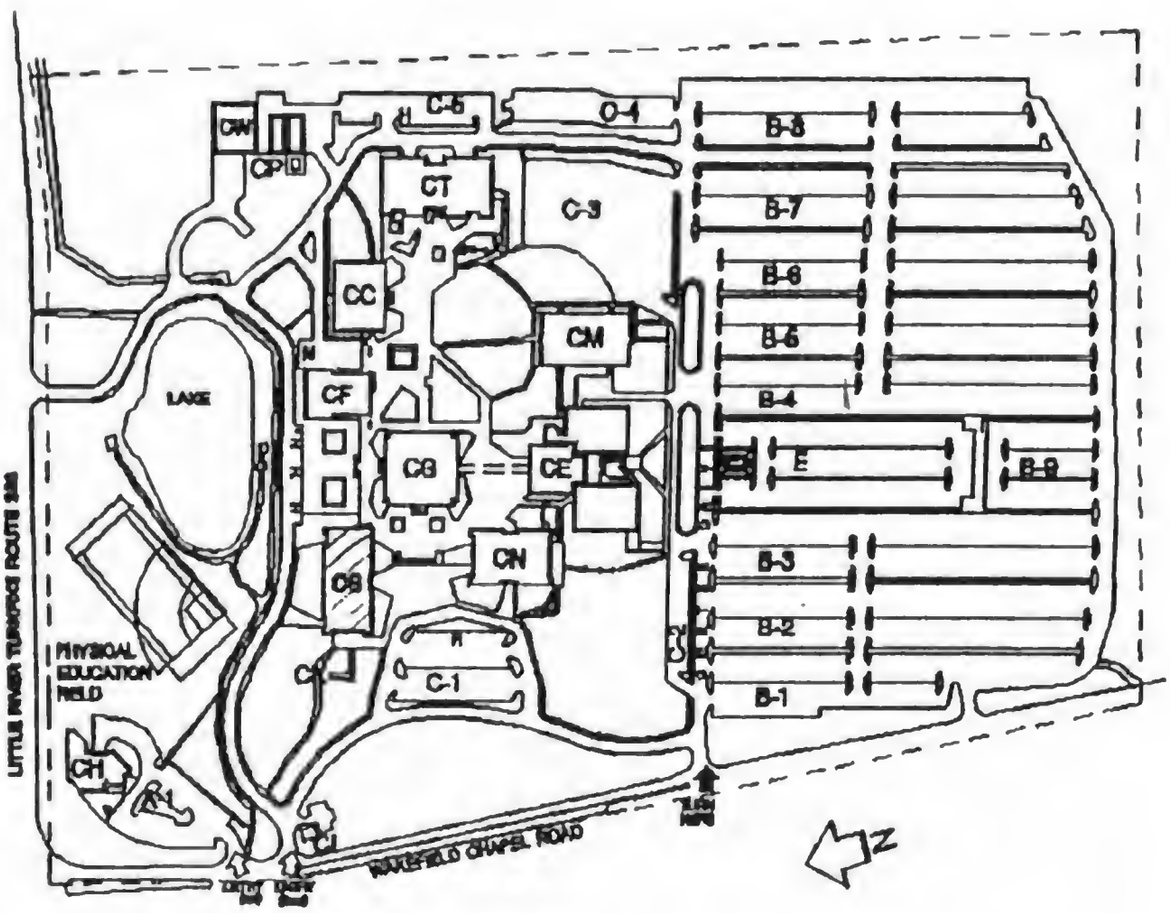

Annandale Campus Map

CS -- Shuler Building

MEMBERSHIP APPLICATION

I wish to _____ initiate _____ renew membership in the Virginia Herpetological Society for the year _____ 2001 _____ 2002 _____ 2003.

Name _____

Address _____

_____

_____ Phone _____

email address: _____

Dues Category: ____ Regular ($15.00)
____ Family ($20.00)
____ Under 18 ($8.00)
____ Life ($225.00)

Interests: ____ Amphibians ____ Reptiles
____ Distribution ____ Research
____Captive Husbandry
___ Specifically _____

Make checks payable to the Virginia Herpetological Society and send to: Dr. Paul Sattler, VHS Secretary/Treasurer, Department of Biology, Liberty University, 1971 University Blvd., Lynchburg, VA 24502

Visit the VHS web site at: http://fwie.fw.vt.edu/VHS/

Field Notes

This section provides a means of publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: Scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data, and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. ALL FIELD NOTES MUST INCLUDE A BRIEF STATEMENT EXPLAINING THE SIGNIFICANCE OF THE RECORD (e.g., new county record) OR OBSERVATION (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed; all changes must be approved by the author(s) before publication.

If the field note contains information on a new county (or state) record, verification is REQUIRED in the form of a voucher specimen deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a color photograph (print or slide) deposited in the archives of the Virginia Herpetological Society. Photographs should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult Mitchell and Reay (1999. *Atlas of Amphibians and Reptiles in Virginia*), Mitchell (1994. *The Reptiles of Virginia*), Tobey (1985. *Virginia's Amphibians and Reptiles: A Distributional Survey*) and other recent literature to determine if they may have a new county record. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

The correct citation format is: Tobey, F. J. 1989. Field notes: *Coluber constrictor constrictor. Catesbeiana* 9(2): 35.

Photographs

High contrast black-and-white photographs of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Submissions should be no larger than 5 x 7 inches and printed on glossy paper. Published photographs will be deposited in the archives of the Virginia Herpetological Society.